



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,863	11/03/2003	Paul J. Marganski	ATMI-669	5129
25559	7590	10/03/2005	EXAMINER	
ATMI, INC. 7 COMMERCE DRIVE DANBURY, CT 06810			GORDON, BRIAN R	
			ART UNIT	PAPER NUMBER
			1743	
DATE MAILED: 10/03/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/699,863

Applicant(s)

MARGANSKI ET AL.

Examiner

Brian R. Gordon

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11-3-03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3-31-05, 7-30-04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☒ Other: IDS 2-19-04.

## **DETAILED ACTION**

### ***Claim Interpretations***

1. The only structural requirements of claim 1 are a vessel and a colorimetric member. The remainder of the claim is directed to functional language or how applicant intends for the elements to be used.

As to the term "shrink-wrap film", the examiner asserts that any plastic film or those films made of the same material as specified by applicant would inherently be considered as a "shrink-wrap film".

Claims 8 and 9 appear to be duplicate claims. Claim is directed to how the colorimetric agent is placed in the film. This is a process limitation and the matter of how the agent is placed in the film has no patentable weight in considering the structure.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 4, it is unclear if applicant intends to claim the valve head as an element of the invention. The claim states the colorimetric member is mounted to a valve head, but does not positive recite the vessel comprises a vale head.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 6-13, 15-22, 24-31, and 33-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Puri et al. US 2004/0115818.

Puri et al. disclose an apparatus for detecting a leak of a fluid from a vessel having an inner wall and an outer wall includes at least one chemical material layer adjacent the outer wall. At least a portion of the chemical material layer is adapted to undergo a chemical reaction with a portion of the fluid leaking through the outer wall. The apparatus may also include at least one semi-permeable material layer adjacent the chemical material layer. The fluid may be a pressurized gas, such as hydrogen or another gas that will react with the chemical material layer to produce a detectable odor and/or a detectable discoloration of the chemical material layer.

The chemical material layer contains at least one chemical material which, upon reaction with the leaking fluid, generates an odor and/or changes color. The chemical materials may also be encapsulated between an appropriate semi-permeable material layer (getter) and the walls of the fluid (gas) storage vessels and piping.

The thin encapsulating layer is formed on the odorant film, for example, using a rubbery polymer such as polydimethyl siloxane amongst other rubbery materials and glassy polymers, such as polyimides, polysulfones, polyamides, polyarylates, polyolefins, polycarbonates, and the like.

The chemical material in Example 1 is mixed with an appropriate polymer solution to make a coating solution capable of forming a film on the surface of the vessel. A 0.01-10% w/w solution of the polymer in an appropriate organic solvent is made and the solution from Example 1 is added to it in sufficient quantity. A single layer or multi-layer coating of this material is applied to the outer walls of the fluid vessel.

Persons skilled in the art will recognize that one or more additional semi-permeable materials or permeable material layers could be placed in between the vessel wall and the chemical material layer and/or in between the chemical material layer and the semi-permeable material layer employed in the present invention, as described in the embodiments above. Such arrangements would still function in accordance with the present invention as long as the additional semi-permeable or permeable materials are permeable to the stored gas (fluid) and/or to at least a portion of the chemical material from the chemical material layer. The additional semi-permeable or permeable material in such an arrangement could be in any of the following forms: solid, liquid, gaseous, or multi-phase.

6. Claims 1-6 and 19-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuepper et al. US 6,323,032.

Kuepper et al. disclose air removal from the sterilization chamber (vessel) may be achieved in a number of ways. For example, in a gravity steam sterilizer, the principle of gravity displacement is utilized, in which steam entering at the top of the chamber displaces the air through a valve in the base of the chamber. In a prevacuum steam sterilizer, on the other hand, air is removed forcibly by deep evacuation of the chamber or by a combination of evacuation and steam injection at either subatmospheric and/or superatmospheric pressures.

Any air which is not removed from the sterilization chamber during the air removal phase of the cycle or which leaks into the chamber during a subatmospheric pressure stage due to faulty gaskets, valves or seals, may form air pockets within the load that is being sterilized.

One commonly-used procedure for evaluating the effectiveness of air removal during the air removal phase of a porous load steam sterilization cycle and/or for testing for the presence of non-condensable gases is known as the Bowie-Dick test. The typical Bowie-Dick test pack essentially consists of a stack of freshly laundered towels folded to a specific size, with a chemical indicator sheet (colorimetric member) placed in the centre of the pack. Chemical indicator test sheets undergo a visible change from one distinct colour to another, for example, from an initial white to a final black colour, upon exposure to the sterilization process. If the air removal within the sterilizer is insufficient, or if non-condensable gases are present during the process in sufficient quantity, an air/gas pocket will form in the centre of the pack thereby preventing steam from contacting the steam sensitive chemical indicator sheet. The consequence of

Art Unit: 1743

inadequate steam penetration is a non-uniform colour development across the surface of the chemical indicator test sheet: thus, the presence of the air/gas pocket will be recorded by the failure of the indicator to undergo the complete or uniform colour change indicative of adequate steam penetration.

7. Claims 1 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Christie, US 4,408,480.

Christie discloses the leakage of noncombustible gas from refrigeration systems (vessel) and the like has been determinable with the use of Halide gas leak detectors wherein there is a flame which distinctly changes color (colorimetric member) in the presence of Freon, Carrene and Methyl Bromide vapors. The concentration of these leaking gas vapors is low, for example 10%, with respect to the surrounding atmosphere; and the flame is produced by a clean burning gas such as Propane in the presence of a Halide reactor plate at or surrounding the flame. Heretofore, the shield or burner holder has not afforded sufficient obliteration against surrounding light, and for example it is next to impossible to detect leaks thereby in direct sunlight. In practice, there is a search hose leading to the burner holder, the terminal end of said hose being open and held near the potential leak points to be tested. Such a leak is referred to as a Perchlorethylene leak, Chloride being employed in the reaction plate, and is detected by color change in the Propane flame above the reactor plate; pale blue indicating no leakage present, pale green indicating slight leakage vapors present, brilliant green indicating moderate leakage vapors present, and brilliant peacock blue indicating heavy leakage vapors present. In bright sunlight the slight and moderate leaks are not

detectable at all and even the most brilliant color change is not readily detectable.

Therefore, it is a general object of this invention to provide a viewer that obscures the detection flame from all direct light that would normally interfere with the observation required by the technician in his search for leaks.

8. Claims 1- 4, 6-13, 15-22, 24-31, 33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Stenholm et al., US 6,093,572.

Stenholm et al. disclose improved oxygen indicators based on said colored compositions (colorimetric member) which are especially suitable to be a part of a container (vessel) for long-time storage of oxygen sensitive pharmaceuticals for parenteral administration.

Oxygen indicators (colorimetric member) according to the present invention consist of the mentioned color compositions optionally combined with a carrier.

The carrier is preferably an enclosing package formed membrane made of a polymeric material through which oxygen can permeate, but also impregnated strips of a porous material and hydrogels are conceivable alternatives as carriers. Alternatively, the oxygen indicator can be formulated as a tablet, in the form of pellets, formulated in a hydrogel or compounded into various solid or semi-solid carries generally known to persons skilled in this technique. For example, the oxygen indicating colored composition can be mixed with a suitable carrier composition which is conventionally used in tableting or pelletization procedures. Another alternative is to include the indicator in a layer in a multilayered polymeric material prepared by lamination or coextrusion. The indicator composition may then be dispersed and evenly distributed in



a melted polymer material which is formed into layer in multilayered polymeric film (sheet-form) structure suitable for the manufacturing of containers with conventional technology.

Especially in applications related to the pharmaceutical industry, the oxygen indicators based on the colored composition, must be possible to steam sterilize in an autoclavation process and be compatible with the other components of a container (vessel) filled with pharmaceuticals. For this reason, the carrier should also be capable of such a heat treatment and it is suitable to enclose the indicator composition in a small sachet or bag of a similar material as the container containing the degradable pharmaceuticals with which it is aimed to be stored. To enable a correct indicator function it is a prerequisite that the material enclosing the indicator admits oxygen transport. Preferred materials are based on polyolefins and may comprise thermoplastic elastomers to improve on their mechanical properties. Especially suitable are materials based on polyethylene and/or polypropylene and their copolymers. An especially preferred material typically will consist of a multilayered structure and contain a high amount of polypropylene.

During a normal storage, the small amounts of oxygen remaining in the container and in the stored products and such oxygen diffusing through the envelope will be consumed by the oxygen scavenger (getter) and not be able to deteriorate the stored products or affect the indicator. However, if the container is erroneously assembled or accidentally damaged so environmental oxygen is leaking into it in a sufficiently large amount, the oxygen scavenger will be saturated and the surplus oxygen will react with

Art Unit: 1743

the components of the indicator which will change color from pale yellow to green and after certain time to black. The skilled person will be able to make estimations about the time to change the color of the indicator and what level of oxygen is required for the change and predict how it will affect the oxygen labile stored products.

9. Claims 1-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Moore, US 5,447,688.

Moore discloses a detector, which is source specific, for detecting a fugitive emission from a component containing a gaseous or volatile analyte, and is adaptable for adjacent disposition to the component. The device includes (a) a substrate for disposition adjacent the component from or through which the analyte is emitted, said substrate being substantially inert to the analyte, (b) an analyte-reactive reagent, and optionally (c) an indicator. When the detector is applied adjacent the component, a detectable reaction occurs (e.g., color-forming reaction or signal) with the analyte emitted.

In a large number of processing industries, gaseous or volatile materials, especially volatile organic compounds, are transported along or through a system or network having incorporated therein varied components including, for example, pipe lines, valves, fittings (including flanges, seals, and threaded connections), pumps, compressors, pressure relief devices, diaphragms, hatches, sight-glasses, meters, and the like (vessels). These industries include most notably the hydrocarbon processing industries such as petroleum refineries, chemical and petrochemical plants, oil and gas production gas facilities, natural gas processing facilities, and pipeline transfer stations,

Art Unit: 1743

but might also include other industries or facilities such as the pharmaceutical industry, wood products industry, the ceramic industry, and the like. Any of these components interconnect Suitable substrate materials include natural and synthetic materials, such as cellulose (e.g., wood cellulose, cotton, and rayon), polyolefins (e.g., polyethylene, and polypropylene), nylon, synthetic papers, glass fibers, glass beads, fritted glass, based etched glass plate or beads, silica gel, fused silica, carbon, ceramic-type materials such as alumina and silica, molecular sieves, zeolites, and the like. The substrate should avoid interfering substances. The substrate material may be applied as a thin coating on an inert carrier or support which preferably is transparent such as polyethylene or Mylar tape or film. (Mylar is a dupont trademark for a polymer of polyethylene terephthalate.) The substrate is of a suitable material capable of holding or containing or sorbing the reagent, such as being provided with a surface coating or impregnated coating of the reagent, which may be accomplished as by spraying, dipping, brushing, spreading, printing, etc throughout the plant or facility are susceptible to leaks especially at a joint or juncture due to such factors as defects in the equipment or in the connecting parts, temperature variations causing an expansion and contraction of the component especially at a joint, corrosion, or mishandling by a worker. Many or most of these gaseous or volatile organic compounds utilized or produced in these industries can be potentially toxic or hazardous, and therefore it is essential to maintain a tight system so as to avoid or minimize any leaks. For example, in order to provide a tight connection at a joint or juncture, three classes of joints are in conventional use: viz., welded joints, flanged joints, and a stuffing box as at meter and valve joints. A leak

at a juncture can develop at anytime with all three classes, but the latter two are more probable to be troublesome.

It should be understood that the substrate, per se, which is an essential member of the analytical device or detector (colorimetric member), can be, but need not be in direct or actual contact with the component or some portion thereof.

The substrate may comprise papers, fabrics, foil, or films, which can be cellulosic, metallic, or synthetic, including nonwovens such as meltblown or spunbonded polyolefins, or organic polymers or copolymers such as polyethylene or nylon, or a combination thereof.

A particularly useful exterior overlay comprises an adhesive element or member, such as a plastic tape which is transparent to the color signal. The substrate is affixed to the tacky surface of the adhesive element and within its boundary so as to provide an overlap of the tacky surface for adherence to the component or to the encapsulating means, if desired, and in this manner, the substrate is thereby maintained in position and protected from contamination. Alternatively, both surfaces of the exterior overlay can be tacky, so that the substrate can be affixed to one surface and the whole structure be contained within the interior of the capsule, such as affixing the structure to the interior wall of the capsule, or the structure be bonded to the exterior surface over a hole in the wall of the capsule. As shown in table 1, polyvinyl chloride is an element of the film.

10. Claims 1- 4, 6, 19-22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Mallow et al., US 5,322,797.

Mallow et al. disclose the detection of the presence of certain vapors or liquid reactants, such as ammonia or amino compounds, is quite important, particularly when the presence of such vapors or liquid reactants indicates the presence of toxic chemicals or biological warfare agents, or the undesirable leakage of a gas from an enclosure (vessel). A number of prior apparatus and methods for detecting vapors and liquid reactants are known in the art. Nevertheless, the art does not teach or suggest a sprayable, brushable, or trowelable paint which incorporates in its dried film (colorimetric member) the combined properties of vapor permeable, liquid repellant film and an accessible indicator which can detect extremely low concentrations of reactant, such as ammonia, and regenerate the original color. More particularly, prior art does not teach the extraordinary contribution of amorphous silica as intensifier of sensitivity.

The composition of the present invention may be utilized for detecting chemical or biological warfare agents and for monitoring respiratory gases. In either application, the composition of the present invention is applied to an object and the color change of the composition is thereafter sensed, either visually or with appropriate instrumentation. The degree of color change may also be measured. The composition of the present invention may also be utilized for detecting leakage from an enclosure by introducing a predetermined gas to the enclosure, applying the composition of the present invention to the exterior of the enclosure or an object adjacent to the exterior of such enclosure, and sensing the color change in the composition, either visually or with appropriate instrumentation. The degree of color change of the composition may also be measured.

11. Claims 1- 4, 6, 19-22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Wegrzyn, US 4,822,743.

Wegrzyn discloses A reusable indicating material (cloth/sheet-form) for detecting leaks in sealed structures (for detecting leaks in fuel containers, fuel tanks and pressurized areas of aircraft structure) and other closed bodies comprises a fabric saturated with an indicator solution containing an acid-base indicator, a surfactant, a buffering system and a humectant. The indicator solution remains reactive when the fabric is dry to the touch and will indicate the presence of leaks in the structure being tested by changing color when a reactive gas escapes from the structure being tested. Upon removal from the tested structure the indicator material reverts to its original color and is available for subsequent tests.

12. Claims 1-12, 15, 19-30, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Matthiessen US 4,106,428.

Matthiessen discloses an improved shield for a pipe joint (vessel) is described that includes an elongated body to be wrapped around a pipe coupling, formed from a strip of pliable fabric. One or more fabric liner strips are disposed within the body, and means are provided for separably connecting its ends together. The liner strips are loosely slidable relative to the body during wrapping of the assembly of the body and liner strips around the pipe coupling (valve). One or more display means for monitoring the coupling integrity are held against the fabric body in assembled relation by a clear envelope means. The display means (colorimetric member) is formed from a sheet of

chemically sensitive material having an indicating means thereon which, upon contact with leakage from the pipe coupling, provides a visual indication of such leakage.

To overcome the problems of the prior art, the present invention provides an improved shield for a pipe coupling capable of utilizing the most advanced developments in the field of plastic technology as well as providing display means for monitoring pipe coupling integrity. The shield has an elongated one-piece pliable plastic fabric body of a length and width dimensioned to be wrapped around a pipe coupling with its ends overlapped and having separate connection means for connecting said ends together. A pliable fabric liner strip is confined wholly within and extends centrally along said body. Retaining means are provided for holding the liner strip against unintended displacement. At least one display means is provided for monitoring pipe coupling integrity, the display means formed from a sheet of chemically sensitive material subject to color change. A clear envelope means is disposed over the display means to hold the display means and fabric body in assembled relation to the side of the shield body opposite the attachment of the liner strip so that a visual indication of pipe coupling integrity is provided by the display means. The type of fabric used for the outer cover and the reinforcing core is porous, so that any leaking material can penetrate slowly through the layers of fabric and make contact with the chemically sensitive material used as the display means so that color changes show the presence of leaking material.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 14 and 32 rejected under 35 U.S.C. 103(a) as being unpatentable over Puri et al.

Puri et al. does not disclose the indicator is specifically formed of PVC.



It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize a conventional, well-know material such as PVC may also be employed as a material of the indicator strip for rubbery materials, glassy polymers, or combinations thereof may be employed.

### ***Conclusion***

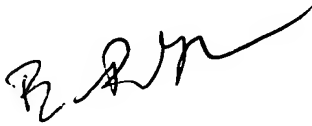
17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wegrzyn; Jeffrey G.; Lechnitz; Kurt; Flippo, Jr.; W. J. B.; McStravick; David M. et al.; Ellis; Leonard C.; and Fromm; Bernard W. et al. disclose leak detection devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, with 2nd and 4th F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1743

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'B. R. M.', written in a cursive style.

brg